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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,582	09/03/2004	Jose Luis Gonzalez Salazar	P/4607-2	2866

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OSTROLENK FABER GERB & SOFFEN
1180 AVENUE OF THE AMERICAS
NEW YORK, NY 100368403

EXAMINER
CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,582	GONZALEZ SALAZAR ET AL.	
	Examiner	Art Unit	
	DENNIS CORDRAY	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 February 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's amendments, filed 2/26/2009, cancelling the previous claims and presenting new claims directed to the elected invention have removed the basis for all outstanding rejections. Therefore, the rejections have been withdrawn. However, upon further consideration and due to the amendments, new grounds of rejection are made as detailed below.

With regard to the comments made on the cited references, which are applied in the current rejections, the following responses are made.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The argued features of Claims 22-25 and 28-29, see p 9, are not included in lower numbered claims and do not apply to the rejections thereof.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites "said heating structures include a hollow wall chamber of said reactor." Claim 13 depends from Claim 12, which recites "a reactor having an inlet above an interior space" and "heating structures in the interior space." The positioning of the hollow wall chamber in the interior of the reactor is not clear. From the description of the figures (pp 4-5), the walls of the reactor are made up of two chambers (21) and (22) having inner and outer walls (19) which are hollow. As such, the hollow walls are not in the interior space of the reactor but are the walls that enclose said interior space.

Claim 15 recites "said heating structures include two hollow wall chambers of said reactor." The above discussion applies similarly.

Claims 14 and 16-27 depend from and inherit the indefiniteness of Claim 13 or Claim 15.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12, 28 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheeres (5240656).

Claim 12: Scheeres discloses an apparatus (machine) for recycling plastics waste contaminated with dirt, drink and food (organic and inorganic material) to obtain a molten contaminated plastic that can be molded into a shaped solidified product (a moldable paste) (Abs; col 9, lines 1-4 and 60-68; col 5, lines 1-17; col 11, lines 8-16; col 16, lines 38-40). The machine comprises a chamber (interior space) for receiving plastics waste (corresponds to the claimed reactor), means for heating plastics waste in the chamber to form a flow of molten plastics that exits through an outlet in the bottom of the chamber (col 16, lines 41-48). The chamber has an inlet above the interior space (Fig 4, items 7, 30 and 31; col 26, lines 23-28) and heating structures in the interior space (col 17, lines 17-29; col 18, lines 27-35) for heating and forming the plastics into a moldable paste material that oozes out of the outlet (col 10, lines 63-64).

Claims 28 and 29: Scheeres discloses that, in some embodiments, the invention comprises means, such as a paddle or screw to increase throughput and to accentuate the melt against the heated wall of the chamber, thus feeding equipment for receiving

and feeding raw material into the reactor by mechanical force is disclosed (col 35, lines 4-7).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12-17, 19-25 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii (JP 51-30115, also JP-76030115, English abstract used) in view of Scheeres.

Claims 12-14: Ishii discloses an apparatus (machine) for liquefying plastic waste for reuse as a reclaimed product (recycling) comprising a heating chamber (reactor) surrounded by a double shelled wall (Fig 1, nos. 1 and 3, hollow wall chamber) and having an inlet above an interior space for receiving raw material, heating structures comprising tubes (no. 2) transversing the interior space at multiple levels and communicating with inlet and outlet chambers (nos. 3 and 4) of the double shelled wall, and an outlet at the bottom of the reactor (near no. 16). The tubes heat the waste while minimizing gaseous products to provide efficient recovery of the plastic. A blower (no. 10, a form of pump) circulates heating gas (a fluid) through the inlet and outlet chambers and the tubes to heat the raw material. A combustion chamber (nos. 5 and 6) burns any gaseous products and reheats the gaseous medium.

Ishii does not disclose solid inorganic and organic waste, or that a moldable paste is obtained.

The disclosure of Scheeres is used as above. Scheeres discloses melting plastic waste contaminated with dirt, drink and food in a heated chamber to obtain a moldable paste.

The art of Ishii, Scheeres and the instant invention is analogous as pertaining to recycling of plastic waste. It would have been obvious to one of ordinary skill in the art to treat plastic waste comprising inorganic and organic components from contamination with dirt, drink and food in the apparatus of Ishii in view of Scheeres as a typical plastic waste material. Alternatively, plastics contain fillers and pigments, which can be inorganic materials. It would also have been obvious to obtain a moldable paste as a reusable reclaimed product.

Claims 15-17: The inlet and outlet chambers comprise the two claimed hollow wall chambers and a plurality of tubes transversing the interior space, each having two ends that communicate with the inlet and outlet chambers, and serving to circulate the heating medium and further heat the raw material.

Claim 19: The blower and combustion chamber are connected in series with each other and with the inlet and outlet chambers and the plurality of transversing tubes to form a closed circuit.

Claims 20 and 21: While not explicitly disclosed, it would have been obvious to provide a source (reservoir) to supply and maintain the amount of heating medium in the heating circuit to circulate through all of the chambers and transverse tubes and

provide constant heating. Since the inlet and outlet chambers surround the interior of the reactor, the raw material is obviously heated by the chambers and tubes.

Claim 22: The disclosed figure of Ishii shows supply and removal of the heating medium at the lower portion of each chamber. However, absent convincing evidence of unobvious results and since the heating medium circulates throughout the chambers, it would have been obvious to one of ordinary skill in the art to remove the heating medium at an upper portion of the outlet chamber as a functionally equivalent option.

Claims 23-25: While not explicitly disclosed, it would have been obvious to one of ordinary skill in the art to use tubes having a rounded cross section as a typical shape for tubes. Alternatively, a rounded cross section would have been obvious to maximize surface area to volume to obtain the most efficient heating. For similar reasons, it would have been obvious for the inner reactor walls to form a rounded cross sectional shape. The lower portion of the reactor is narrower at the base than at the top, thus is generally conical.

Claim 27: Scheeres discloses melting temperature ranges to avoid burning or decomposing the materials for a variety of plastics, the temperatures overlaying the claimed range (col 9, lines 48-59). It would have been obvious to heat the chambers and transversing tubes to the disclosed temperatures to melt the plastic waste with minimum burning or decomposing of the materials.

Claim 28: Ishii discloses a feed screw (no. 15) for feeding raw material into the reactor.

Claim 29: Scheeres discloses that, in some embodiments, the invention comprises means, such as a paddle or screw to increase throughput and to accentuate the melt against the heated wall of the chamber (col 35, lines 4-7). It would have been obvious to include feeding equipment that mechanically forces the waste through the reactor of Ishii to increase throughput and to accentuate the melt against the heated tubes and chamber walls.

Claims 18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii in view of Scheeres and further in view of Schurchardt (6217208).

The disclosures of Ishii and Scheeres are used as above. Ishii and Scheeres do not disclose transverse tubes at multiple radial positions. Ishii and Scheeres also do not disclose a heating oil as the heating fluid. Ishii does disclose transverse tubes at multiple levels.

Schurchardt discloses a static mixer and heat exchanger apparatus for mixing viscous fluids that can be heated or cooled and which can be manufactured inexpensively (Abs; col 1, lines 5-15; col 2, lines 8-12). The apparatus comprises two or more layers of undulating or zig-zag bars which are parallel to each other and which are disposed one above the other rotated by an angle to each other in alternating manner (different radial positions). In a preferred embodiment, the bars comprise channels for the passage of heat transfer fluid, the channels arranged in a straight line through the bars from one side of the mixer to the other and traversing the interior space (col 2, lines 13-47). One embodiment of the apparatus is depicted in Figures 2, 3a, 3b and 3c,

which are described in Example 1 (col 4, lines 10-49). A shell (1) contains an inner housing (2) with alternating layers of bars (3,4). The shell and inner housing form a hollow walled vessel that, in the embodiment presented, is divided into four chambers through which heat transfer oil (heating element) flows. The shell comprises inlets (9, 11) and outlets (10, 12) for heat transfer oil. The bars comprise straight channels (5, 6, 15, 16) through which the heat transfer oil passes from one chamber to an opposing chamber, thus the opposing chambers are in liquid communication via the channels and heating oil flows in uniform manner throughout the complete body and interior of the apparatus. The flow of viscous material is from top to bottom of the apparatus and is divided and mixed by the alternating layers of bars.

The art of Ishii, Scheeres, Schurchardt and the instant invention is analogous as pertaining to heating of viscous materials. Since various plastic materials are processed in the apparatus of Ishii, mixing of the material would have been obvious to one of ordinary skill in the art to obtain a uniform mouldable product. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide transverse tubes in multiple radial positions and levels in the apparatus of Ishii in view of Scheeres and further in view of Schurchardt as an efficient way to provide even heating and mixing of the plastic to provide a uniform mouldable product. It would also have been obvious to use an oil as the heating fluid and substitute a suitable pump for the blower as a functionally equivalent option.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nall (2569824) and Markel et al (3524729) disclose other reactors comprising hollow walls chambers connected by transverse tubes to circulate heating medium through the reactor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dennis Cordray/
Examiner, Art Unit 1791

/Eric Hug/
Primary Examiner, Art Unit 1791